

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF: Paul Colin Barson et al

SERIAL NO: 08/888,361

FILED: July 3, 1997

FOR: Forming A Signature of Parameters Extracted From Information

GROUP ART UNIT: 2762

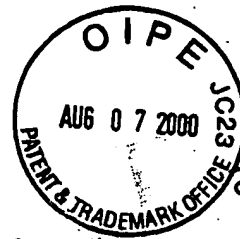
EXAMINER: Wilbert L. Starks, Jr.

Declaration under rule 132

Honorable Commissioner of Patents and Trademarks  
Washington D.C. 20231

Sir,  
I, Katherine Butchart, of 16 Barham Road, Stevenage, Herts, SG2 9HX, UK, declare that:

1. I am currently employed by Nortel Networks Plc a company existing under the laws of Great Britain as a Technology Manager in the Fraud Solutions section, and my duties include researching into fraud detection and the use of neural network technology for fraud detection. I have been employed in this position for approximately the last four years.
2. I received my formal post-secondary school education at the University of Hertfordshire, England, comprising 3 years for Degree of Computer Science B.Sc. Honours, followed by 3 years post-graduate study and research on neural networks for a PhD, also at the University of Hertfordshire.
3. I am familiar with and have read the patent specification of the present application.
4. I believe that fraud is a significant problem for many businesses such as telecommunications, financial services, and electronic retail businesses. The fraud solutions section in which I am technology manager develops systems for detecting and preventing fraud, such as mobile telephone fraud. One of our products SUPERSLEUTH (now marketed as CEREBRUS) is particularly successful and is described in the attached product literature. The SUPERSLEUTH product is used to detect and prevent telephone fraud. My work involves developing this product and carrying out research into new related products.
5. Versions of the SUPERSLEUTH product use the method described in the patent specification to detect anomalies in the transmission of messages, such as fraudulent telephone calls. The SUPERSLEUTH product is successfully used by us and others to detect such anomalies and using the product our customers are able to make significant advances in their battle against fraud. As such the method claimed in the patent application, in my opinion, is an important practical method that allows us and others to detect



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anomalies in the transmission of messages, such as detecting potentially fraudulent telephone calls.

6. The SUPERSLEUTH product comprises an anomaly detector which is a core part of the product, implemented using software on a suitable computer processor. This anomaly detector uses neural network technology to detect anomalies.
7. The outputs of the SUPERSLEUTH product comprise information about anomalies in the transmission of messages such as potentially fraudulent telephone calls or other potentially fraudulent instances of the transmission of messages. This information is extremely useful and important for us and our customers in order to detect and prevent fraud.
8. I have read the US patent documents Hunt et al (US 5365574) and Peterson et al (US5067095).
- ✓ 9. Hunt et al (US 5365574) does not describe use of a neural network. Column 7 lines 64 to 68 of Hunt mentions a voice recognition linear transform routine. This is not a neural network.
- ✓ 10. Hunt et al (US 5365574) describes a voice recognition system which recognises spoken digits and checks that a speaker's voice matches known information about that speaker's voice. Hunt et al (US 5365574) do not describe a system for detecting anomalies in the transmission of messages as described in the patent specification of the present invention. For example, Hunt et al (US 5365574) does not describe creating a first signature comprising a plurality of parameters related to the transmission of messages over a predetermined first time period; creating a second signature comprising a plurality of parameters related to the transmission of messages over a second period shorter than the first and more recent than the first; and updating the first signature by a weighted averaging with the second signature. This process of creating two signatures and updating the first signature using a weighted averaging allows the inputs to the anomaly detector to be updated as new information becomes available about the transmission of messages. For example, new information about telephone calls. Hunt et al (US 5365574) does not describe using an anomaly detector to process such signatures and detect anomalies.
- ✓ 11. Peterson et al (US5067095) describes a very complex neural network system which is a self-organising neural network system. Self-organising neural networks do not require training before use, unlike the neural network system described in the specification of the present application. Peterson et al does not describe creating signatures, or their equivalent and then combining signatures using weighted averaging. Peterson et al describe a time averaged feature vector but this does not relate to combining signatures.
- ✓ 12. A significant problem in detecting anomalies in the transmission of messages, such as detecting mobile phone fraud, involves dealing with data that contains information both about macro behaviour such as long term trends and micro behaviour such as short term fluctuations. The present patent application solves this problem by creating two signatures, one for a long period of time and one for a shorter period of time and then updating these using a weighted averaging. Neither Peterson et al (US5067095) nor Hunt et

al (US 5365574) address this problem or describe how to solve it using signatures.

The undersigned declares further that all statements made herein of her own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of the application or any patent issuing thereon.

*Katherine Butchart.*

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Katherine Butchart

Date: 25/6/00